

A new species of *Lodderena* (Gastropoda: Skeneidae) from the Bahamas

Una nueva especie de *Lodderena* (Gastropoda: Skeneidae) de las Bahamas

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ABSTRACT

A new species in the genus *Lodderena* (Gastropoda: Skeneidae) is described from the Bahamas. The new species is compared to *L. ornata* (Olsson and McGinty, 1958).

RESUMEN

Se describe una nueva especie del género *Lodderena* (Gastropoda: Skeneidae) de las Bahamas. La nueva especie se compara con *L. ornata* (Olsson and McGinty, 1958).

KEY WORDS: Skeneidae, *Lodderena*, Bahamas, new species.

PALABRAS CLAVE: Skeneidae, *Lodderena*, Bahamas, nueva especie.

INTRODUCTION

OLSSON AND MCGINTY (1958) described *Pachystremiscus* as a subgenus of *Cyclostremiscus* Pilsbry and Olsson, 1945. Included were two new species described from the Caribbean coast of Panama: *C. ornatus* and *C. pulchellus*, the type species of *Pachystremiscus*. KAY (1979) figured two species from the Pacific. MOOLENBEEK (1996) discussed the genus *Lodderena* Iredale, 1924, which is considered the correct genus name for this group of species, mentioning most of the existing taxa and describing two new species.

RUBIO, ROLÁN AND REDFERN (1998) studied species of *Lodderena* occurring in the Caribbean, including some specimens from other areas that suggested a wider distribution. They also described

one new species, *L. janetmayae* from Abaco, Bahamas.

In recent years the senior author has continued to examine sediment samples from the Bahamas. One of these contained examples of the three known Caribbean species together with examples of what appeared to be a fourth, undescribed species. The study of this material is the subject of this paper, which includes the description of a new species that is morphologically close to *L. ornata*.

MATERIAL AND METHODS

This study is based on a 0.4 liter sample of sediment collected at a depth

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of 6 m at Lynyard Cay, Abaco, Bahamas.

Abbreviations:

AMNH American Museum of Natural History, New York
ANSP Academy of Natural Sciences, Philadelphia
BMNH The Natural History Museum, London

BMSM Bailey-Matthews Shell Museum, Sanibel, Florida, USA
MNCN Museo Nacional de Ciencias Naturales, Madrid
MNHN Muséum Nationale d'Histoire Naturelle, Paris
ZMB Zoologisches Museum, Berlin
CCR Collection of Colin Redfern, Boca Raton, Florida, USA
CER Collection of Emilio Rolán, Vigo

RESULTS

Family SKENEIDAE Clark, 1851

Genus *Lodderena* Iredale, 1924

Lodderena bunnelli n. sp. (Figs. 1-9)

Type material: Holotype (Figs. 1, 9), 0.56 mm, deposited at ANSP. One paratype deposited in each of the following collections: MNCN (15.05/46685) (Figs. 2, 8), 0.64 mm; MNHN (Fig. 3), 0.56 mm; AMNH (Figs. 4, 7), 0.58 mm; BMNH (Fig. 5), 0.56 mm; ZMB (Fig. 6), 0.60 mm; BMSM. 3 paratypes in CER and 21 in CCR. All type material consists of empty shells collected from the type locality in August, 2004.

Type locality: Lynyard Cay, Abaco, Bahamas in 6 m.

Etymology: Named for Rodger R. Bunnell, who collected the sediment sample that contained the type material.

Description: Shell (Figs. 1-6) very small, rounded, dorsally planispiral, whitish. Protoconch (Figs. 8, 9) approximately 200 μ m in diameter, with about one whorl, nucleus rounded, surface roughened, with 1-2 spiral lines of irregular granules. Separation from the teleoconch is rather well defined. Teleoconch with only one whorl, sometimes a little less. Sculpture is formed dorsally by irregular undulating axial ribs that are well separated initially but become narrower, more numerous and crowded as the whorl develops. The beginning of the peripheral curvature is marked by a narrow spiral cord, above which a series of fine spiral threads starts to form when the whorl is about half developed. The strengthening spiral sculpture, subsequently consisting of up to 9-10 threads, causes the axial ribs to shorten, but they lengthen again just behind the aperture. Sculpture on the rounded periphery of the shell initially consists of three weak, irregular spiral cords that are connected by axial threads of similar strength to form a net-like pattern of

ovoid or rectangular shapes (Fig. 7). After the first half of the whorl this pattern is replaced by spiral threads, one of which is a little stronger and sometimes forms a peripheral angulation. Ventrally the sculpture is very similar, but with the addition of short, widely-spaced axial riblets adjacent to the lower peripheral cord. Occasional shells have a spiral row of nodules close to the suture.

Aperture regularly rounded, with a double peristome.

Microsculpture: Under high magnification, small granules can be seen in the peripheral area (Fig. 7), with very fine axial lines elsewhere.

Dimensions: the holotype is 0.56 mm in maximum diameter, and the largest specimen studied is 0.64 mm.

Distribution: *Lodderena ornata* and *L. pulchella* are widely distributed in the Caribbean area and it is likely that *L. bunnelli* n. sp. has a comparable range, as indicated by the similarity of a shell from the U. S. Virgin Islands figured as *Lodderena* sp. by RUBIO ET AL. (1998, fig.



Figures 1-9. *Lodderena bunnelli* n. sp., from Abaco, Bahamas (CCR). 1: holotype, 0.56 mm (ANSP); 2: paratype, 0.64 mm (MNCN); 3: paratype, 0.56 mm (MNHN); 4-6: paratypes, 0.58, 0.56, 0.60 mm (AMNH, BMNH, ZMB); 7: microsculpture, paratype (AMNH); 8: protoconch, paratype (MNCN); 9: protoconch, holotype (ANSP).

Figuras 1-9. *Lodderena bunnelli*, n. sp., de Abaco, Bahamas (CCR). 1: holotipo, 0,56 mm (ANSP); 2: paratipo, 0,64 mm (MNCN); 3: paratipo, 0,56 mm (MNHN); 4-6: paratipos, 0,58, 0,56, 0,60 mm (AMNH, BMNH, ZMB); 7: microescultura, paratipo (AMNH); 8: protoconcha, paratipo (MNCN); 9: protoconcha, holotipo (ANSP).

Table I. Differences between *Lodderena ornata* and *Lodderena bunnelli* n. sp.
 Tabla I. Diferencias entre *Lodderena ornata* y *Lodderena bunnelli* n. sp.

	<i>L. ornata</i>	<i>L. bunnelli</i> n. sp.
Dimensions	larger diam. between 0.66 – 0.92 mm n= 10 median= 0.78 mm	smaller diam. between 0.56 – 0.64 mm n=10 median= 0.58 mm
Spire	shell dorsally planispiral; periphery meets aperture near the centre	shell dorsally planispiral; periphery meets aperture near upper dorsal border
Teleoconch	1 whorl + 1/8	1 whorl or a little less
Spiral sculpture	3 very prominent nodulose cords on each side	Usually no nodulose cords; occasionally a small one ventrally close to the suture
Spiral sculpture at the periphery (near beginning of teleoconch whorl)	three prominent cords; sometimes with axial threads forming irregular rectangles	three weak, irregular cords connected by axial threads forming ovoid or rectangular shapes
Spiral sculpture at the periphery (towards end of teleoconch whorl)	three prominent, laterally nodulose cords; intermediate spiral threads only at the end	rarely with cords; numerous spiral lines on a convex curvature
Thickness of outer lip	thicker, about a third of the diameter of the aperture	thinner, about a quarter of the diameter of the aperture
Nucleus of the protoconch	slightly ovoid	rounded
Microsculpture of the protoconch	irregular, mainly near the periphery	some irregular granules spirally aligned
Microsculpture of the teleoconch near the suture	fine	finer

41). The existence of *L. bunnelli* n. sp. may have been overlooked elsewhere in the Caribbean due to its small size and possible confusion with *L. ornata*.

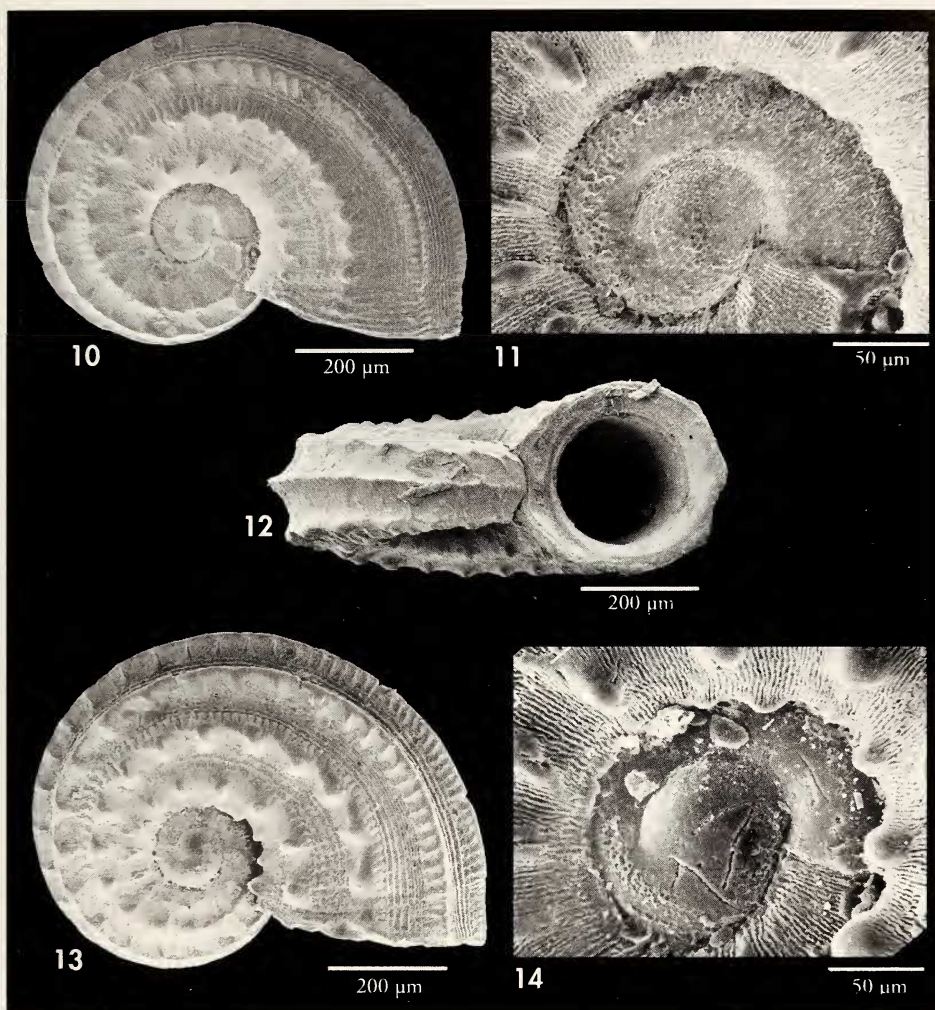
Remarks: The sediment sample that contained the type material of *L. bunnelli* n. sp. also yielded 12 examples of *L. janetmayae*, 20 of *L. pulchella* and 486 of *L. ornata*. Study of this material clearly showed that there was no intergradation between the four species.

MAYR (1963) stated that when two different morphs are found sympatrically without any intergradation between them, they represent two different species. Problems for the taxonomist occur when two different morphs share similar main characters. In the present case the distinction between *Lodderena bunnelli* n. sp. and *L. ornata* (Figs. 10-14), the closest species, was based on several different characters, and importance was also attached to the

lack of any intergradation between these two sympatric species. Comparison of the two species showed us a number of differences, as summarized in Table I.

Another similar species is *Lodderena striata* (Kay, 1979) from Hawaii, but this species is larger (up to 1 mm), and the periphery of the last whorl has only spiral striae, lacking the net-like pattern that is characteristic of *L. bunnelli* n. sp.

Records of *L. ornata* in RUBIO ET AL. (1998) from the Bahamas, Cuba, Cape Verde and São Tomé, together with those in the present work from the Bahamas, São Tomé and Easter Island, show that this species probably has a wide distribution in tropical seas, and that the morphological characters of the shell, including features of the protoconch, remain surprisingly constant throughout its range. *L. emeryi* (Ladd, 1966) is a taxon very similar to *L. ornata* and could even be conspecific (MOOLENBEEK, 1996).



Figures 10, 11. *Lodderena ornata*, 0.78 mm, Abaco, Bahamas (CCR). 10: shell; 11: protoconch. Figure 12. *Lodderena ornata*, 0.75 mm, São Tomé, West Africa (CER). Figures 13, 14. *Lodderena ornata*, 0.80 mm, Easter Island (CER). 13: shell; 14: protoconch.

Figuras 10, 11. Lodderena ornata, 0,78 mm, Abaco, Bahamas (CCR). 10: concha; 11: protoconcha. Figura 12. Lodderena ornata, 0,75 mm, Santo Tomé, África occidental (CER). Figuras 13, 14. Lodderena ornata, 0,80 mm, Isla de Pascua (CER). 13: concha; 14: protoconcha.

It is surprising that one species such as *L. ornata* could be present in such widely separated areas, especially considering that the protoconch is paucispiral and does not have a long planktotrophic period that would allow wide distribution. We think that there are two possible explanations, the first of which is that dispersal could be attributable to

human intervention, such as the discharge of ballast water from ships. Alternatively, this could be a case of reproductive isolation involving more than one species. Identification from widely separated geographic areas has been based solely on shell similarities, and the biology, ecology and soft parts are mostly unknown.

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